

TC-FX205/FX220

SERVICE MANUAL



TC-FX205 (Silver Type)

Note: TC-FX205 is a stereo cassette deck unit in SEN-205.



TC-FX220 (Black Type)

TC-FX205:
US Model
AEP Model
UK Model
E Model

TC-FX220:
US Model
Canadian Model
AEP Model
UK Model
E Model

SPECIFICATIONS

Tape Transport Mechanism Type	TCM-C8F
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TC-FX205

Recording system	4-track 2-channel stereo
Frequency response	DOLBY NR OFF (DIN) With TYPE IV cassette (Sony METAL-ES cassette) 30 - 15,000 Hz (± 3 dB)
	With TYPE II cassette (Sony UCX cassette) 30 - 14,000 Hz (± 3 dB)
	With TYPE I cassette (Sony HF-S cassette) 30 - 13,000 Hz (± 3 dB)
Wow and flutter	0.08% WRMS (NAB) $\pm 0.2\%$ (DIN)

General

Dimensions	Approx. 430 × 105 × 250 mm (w/h/d) (17 × 4 $\frac{1}{4}$ × 9 $\frac{1}{8}$ inches)
Weight	Incl. projecting parts and controls Approx. 2.9 kg (6 lb 7 oz) net

— Continued on next page —

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

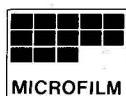
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET
UNE MARQUE SUR LES DIAGRAMMES SCHÉ-
MATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES
POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REM-
PLACER CES COMPOSANTS QUE PAR DES PIÈCES
SONY DONT LES NUMÉROS SONT DONNÉS DANS CE
MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR
SONY.

STEREO CASSETTE DECK
SONY®



MICROFILM

TC

TC-FX205/FX220

TC-FX220

Recording system 4-track 2-channel stereo
 Fast-forward and rewind time Approx. 100 sec. (with C-60 cassette)
 Bias frequency 105 kHz
 Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch	OFF	ON
TYPE IV (Sony METAL-ES)		55 dB	65 dB
TYPE II (Sony UCX)		55 dB	63 dB
TYPE I (Sony HF-S)		52 dB	61 dB

Total harmonic distortion 1.0% (with Sony METAL-ES cassettes)

Frequency response DOLBY NR OFF

- With TYPE IV cassette (Sony METAL-ES)
 - 20 - 17,000 Hz
 - 30 - 15,000 Hz (± 3 dB)
 - 30 - 13,000 Hz (± 3 dB, 0 VU recording)
 - 30 - 15,000 Hz (DIN)
- With TYPE II cassette (Sony UCX)
 - 20 - 17,000 Hz
 - 30 - 14,000 Hz (± 3 dB)
 - 30 - 14,000 Hz (DIN)
- With TYPE I cassette (Sony HF-S)
 - 20 - 16,000 Hz
 - 30 - 13,000 Hz (DIN)

Wow and flutter 0.08% WRMS (NAB)
 $\pm 0.2\%$ (DIN)

Inputs Microphone inputs (phone jacks)
 Sensitivity 0.25 mV (-70 dB)
 For a low-impedance microphone
 Line inputs (phono jacks)
 Sensitivity 77.5 mV (-20 dB)
 Input impedance 47 kilohms
 Line outputs (phono jacks)
 Output level 0.44 V (-5 dB) at load
 impedance 50 kilohms
 Load impedance over 10 kilohms
 Headphone output (stereo phone jack)
 Output level -28 dB at a
 load impedance of 8 ohms

General

Power requirements

AEP model: 220 V ac, 50/60 Hz
 (240 V ac adjustable by authorized
 Sony personnel)
 UK model: 240 V ac, 50/60 Hz
 (220 V ac adjustable by authorized
 Sony personnel)
 US, Canadian model: 120 V ac, 60 Hz
 E model: 120 or 220-240 V ac adjustable,
 50/60 Hz

Power consumption

8 watts

Dimensions Approx. 430 x 105 x 250 mm (w/h/d)
 (17 x 4 1/4 x 9 7/8 inches)
 including projecting parts and controls

Weight Approx. 3.3 kg (7 lbs 5 oz)

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

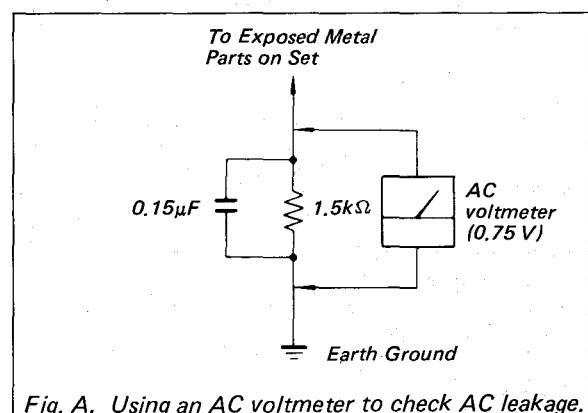
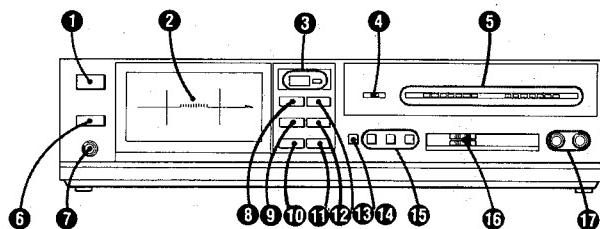


Fig. A. Using an AC voltmeter to check AC leakage.

FUNCTION OF CONTROLS



① POWER switch (TC-FX220 only)

② Cassette holder

③ TAPE COUNTER and RESET button

The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the RESET button.

④ REC indicator

This indicator lights when the ● button is pressed.

⑤ LED PEAK LEVEL METERS

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode.

⑥ ▲ (eject) button

Press this button to open the cassette holder.

⑦ HEADPHONES jack (stereo phone jack)

(TC-FX220 only)

⑧ ■ REW (rewind) button

Press this button to rewind the tape.

⑨ ■ STOP button

⑩ ● REC (record) button

⑪ ▶ PAUSE button

⑫ ▶ FWD (forward) button

⑬ ▶▶ FF (fast-forward) button

Press this button to advance the tape rapidly.

⑭ DOLBY NR* switch

To record with the Dolby NR (Noise Reduction) process, depress this switch (■ ON). To record without the Dolby NR process, press to release this switch (□ OFF). When playing back, set this switch to the same position used in recording.

* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

⑮ TAPE select buttons

Depress one of the TAPE select buttons, depending on which type of tape you use. The optimum bias current adjustment for recording and the optimum equalization adjustment for both recording and playback are set.

⑯ REC LEVEL (recording level) controls

These controls adjust the recording level.

⑰ MIC jacks (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

Difference between TC-FX205 and TC-FX220.

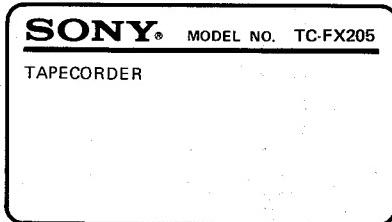
	TC-FX205	TC-FX220
Power Transformer (T901)	X	○
Headphones Jack (J302)	X	○
Headphone Amp. (IC302)	X	○
Power Supply Connector (CN304)	○	X

TC-FX205 is a stereo cassette deck unit in SEN-205 (stereo component system).

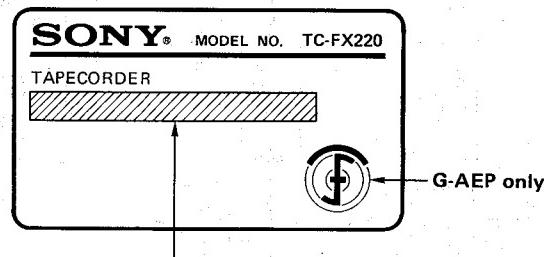
MODEL IDENTIFICATION

— Specification label on jack plate —

TC-FX205



TC-FX220



US, Canadian model: AC: 120V 60 Hz 8W

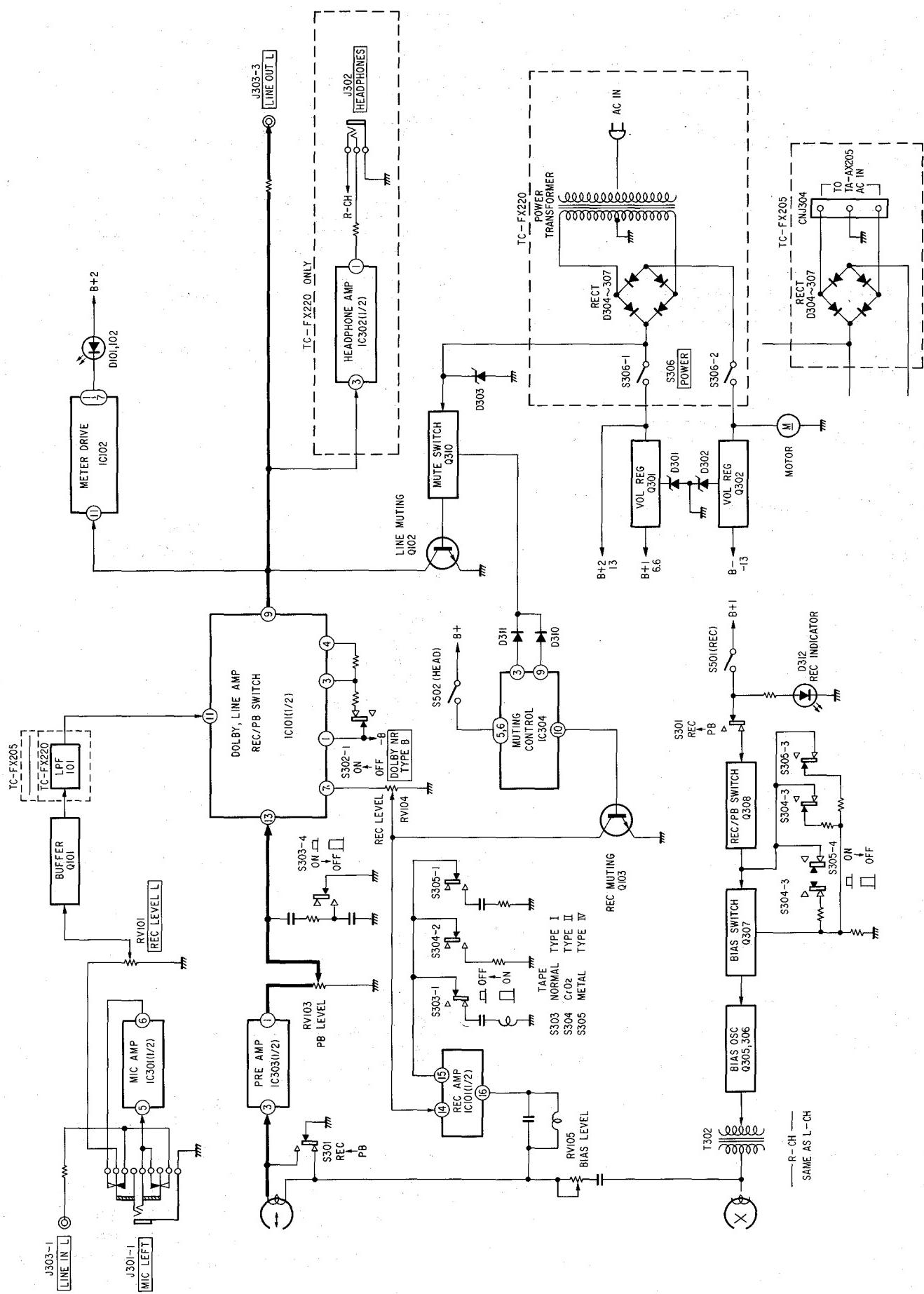
AEP model: AC: 220V 50/60 Hz 8W

UK model: AC: 240V 50/60 Hz 8W

E model: AC: 120, 220, 240V 50/60 Hz 8W

SECTION 1

BLOCK DIAGRAM

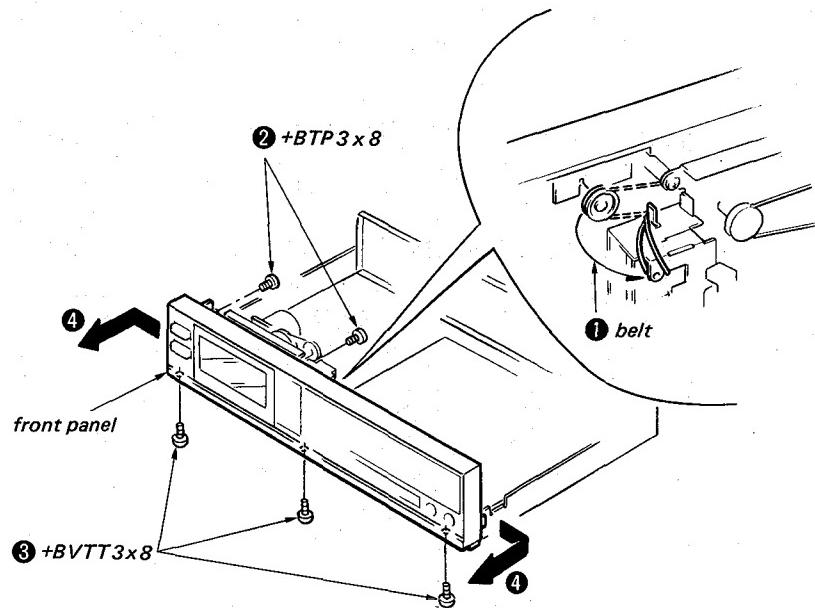


SECTION 2 DISASSEMBLY

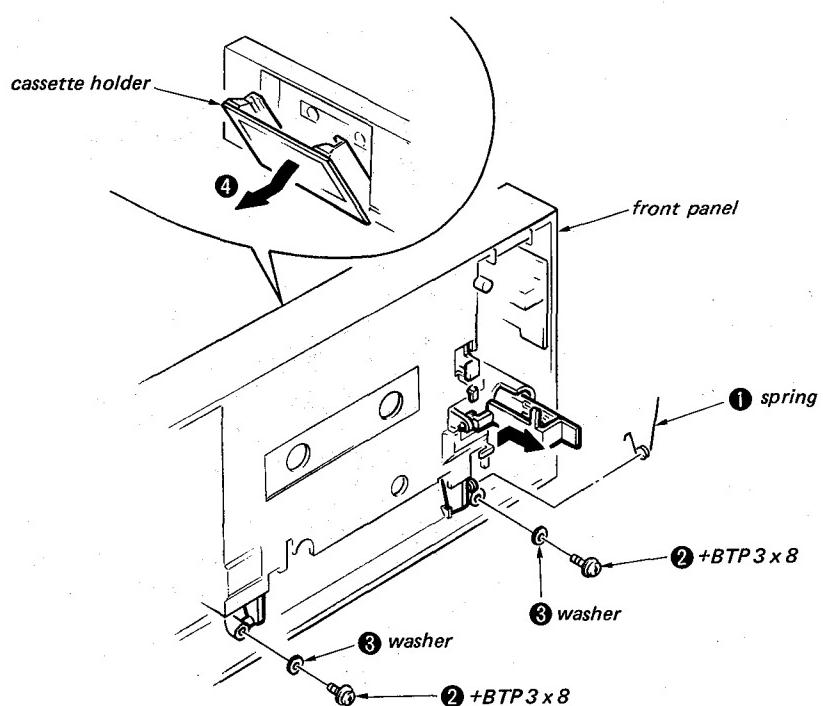
- Follow the disassembly procedure in the numerical order given.

Remove the case.
(four screws)

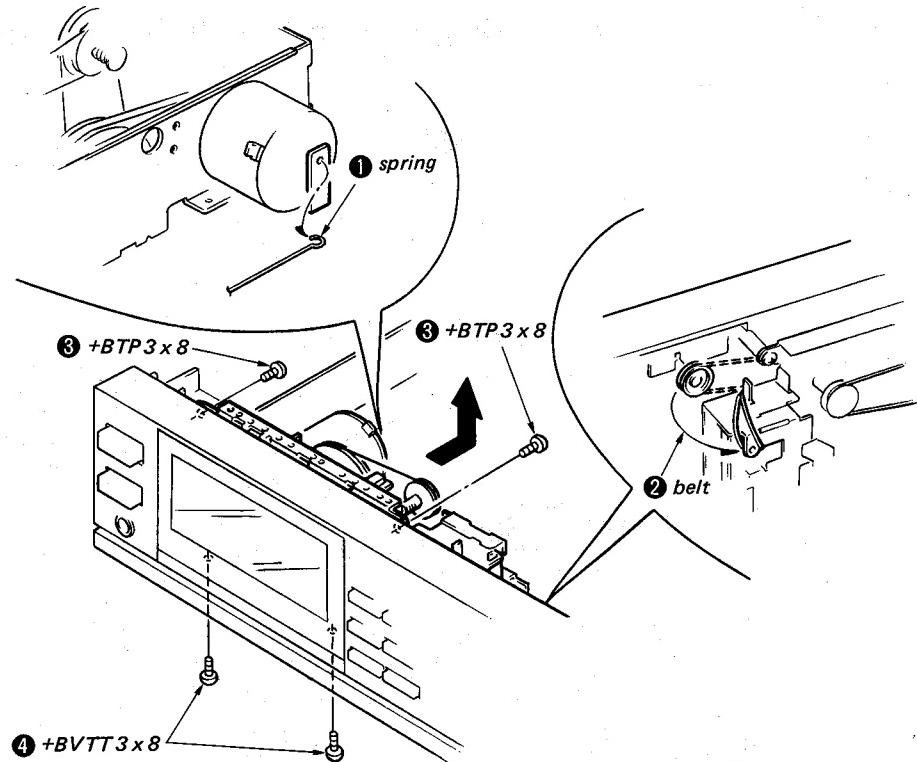
FRONT PANEL



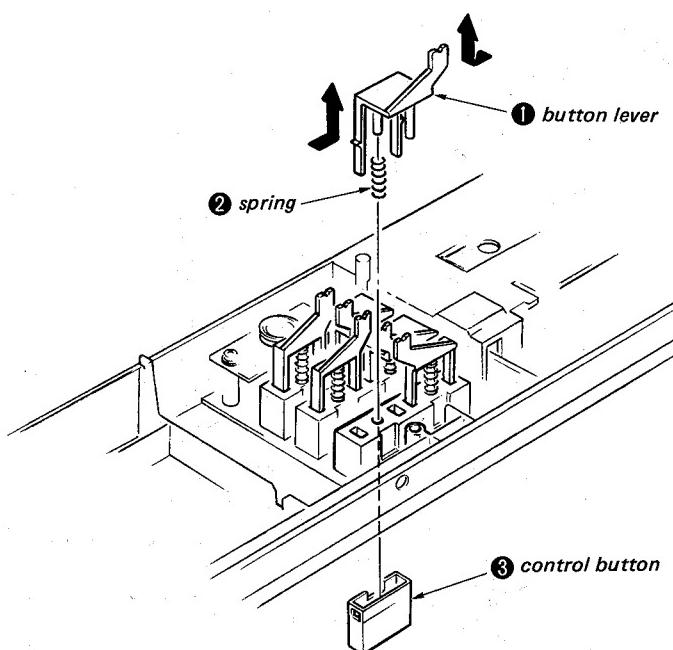
CASSETTE HOLDER



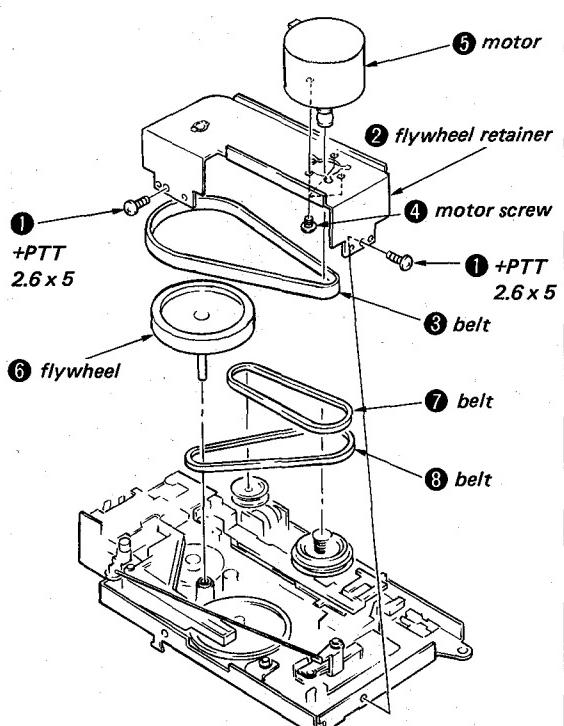
TRANSPORT MECHANISM



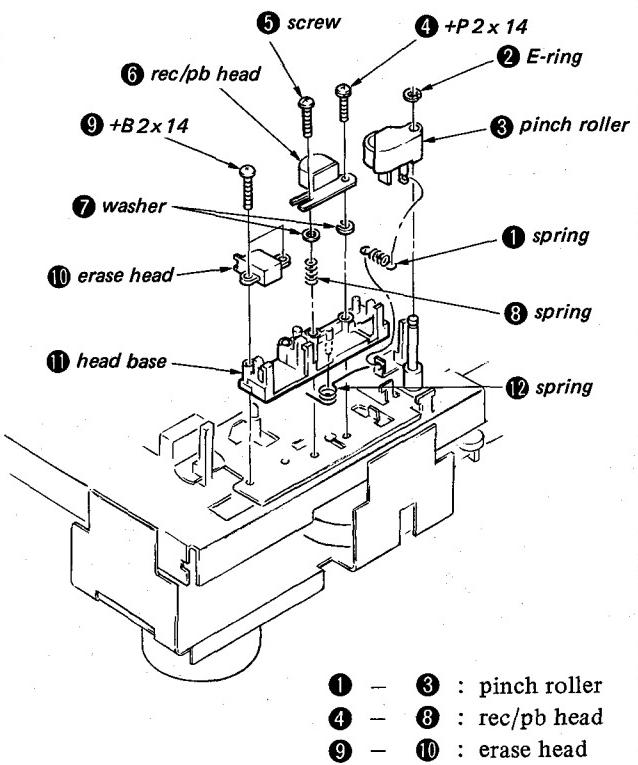
CONTROL BUTTON



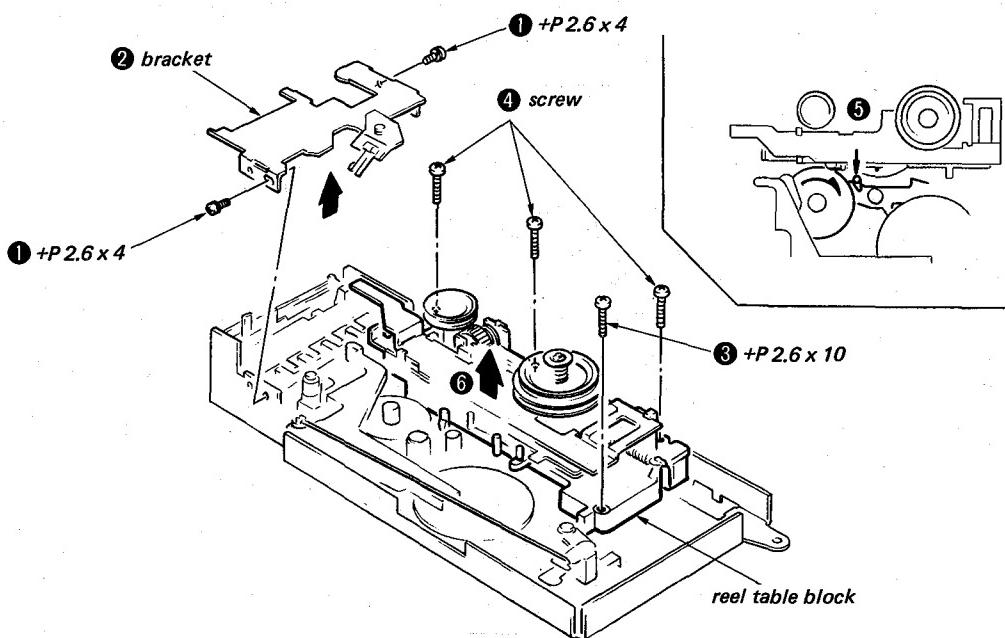
MOTOR, FLYWHEEL, BELT



REC/PB HEAD, ERASE HEAD, PINCH ROLLER



REEL TABLE BLOCK



SECTION 3 ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

No mechanical adjustments applied to this unit.

- Torque Measurement

Mode	Torque Meter	Torque
FWD	CQ-102C	40 – 70 g·cm (0.55 – 0.97 oz·inch)
FF	CQ-201B	70 – 150 g·cm (0.97 – 2.07 oz·inch)
REW	CQ-201B	70 – 150 g·cm (0.97 – 2.07 oz·inch)
FWD back tension	CQ-102C	2 – 6 g·cm (0.028 – 0.083 oz·inch)

3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.

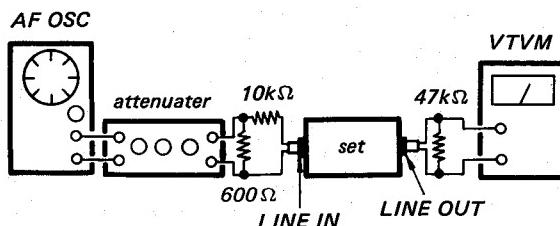
The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE switches according to the tape as follows.

Tape	Tape Switch
CS-17	TYPE I NORMAL
CS-26	TYPE II CrO ₂
CS-40	TYPE IV METAL

- Switches and controls should be set as follows unless otherwise specified.
DOLBY NR switch: OFF
TAPE SELECT switch: TYPE I NORMAL
- Standard Record:
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

— Record Mode —



Standard Input Level

	MIC	LINE IN
source impedance	300Ω	10kΩ
input level	0.77 mV (-60 dB)	0.25 V (-10 dB)

Standard Output Level

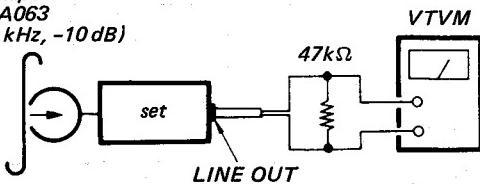
	HEADPHONES	LINE OUT
load impedance	8Ω	47kΩ
output level	31 mV (-28 dB)	0.435 V (-5 dB)

Record/playback Head Azimuth Adjustment

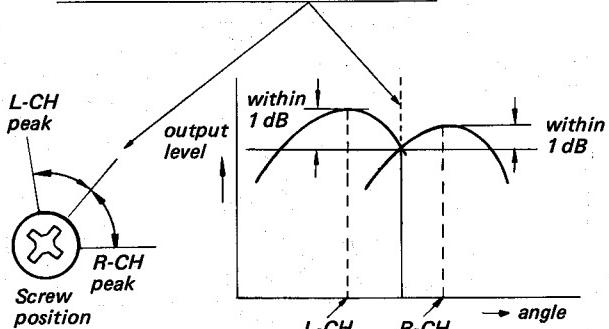
Procedure:

1. Mode: playback

*test tape
P-4-A063
(6.3 kHz, -10 dB)*



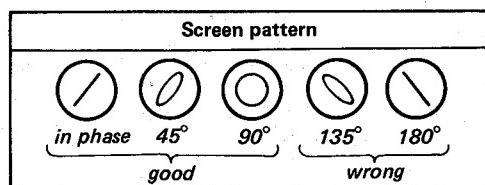
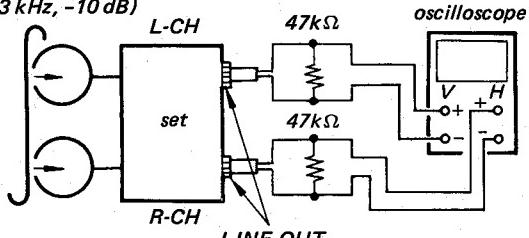
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



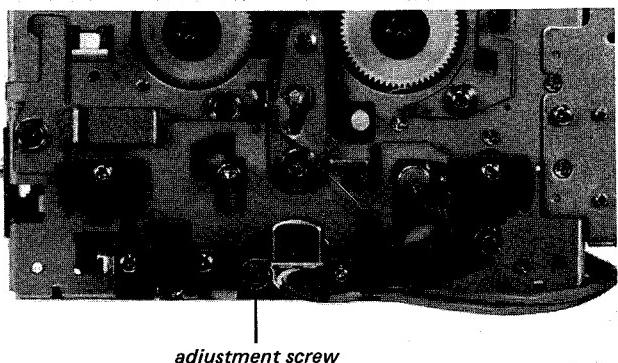
3. Phase Check

Mode: playback

*test tape
P-4-A063
(6.3 kHz, -10 dB)*

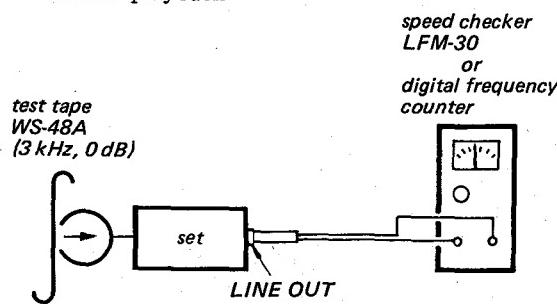


Adjustment Location:



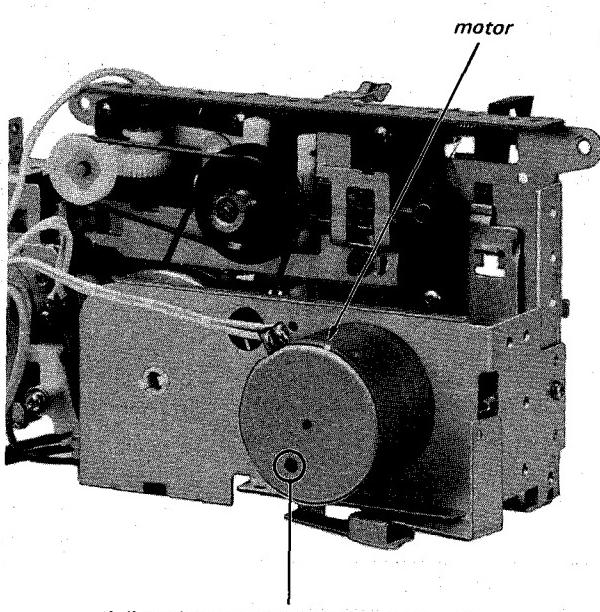
Tape Speed Adjustment**Procedure:**

Mode: playback

**Specification:**

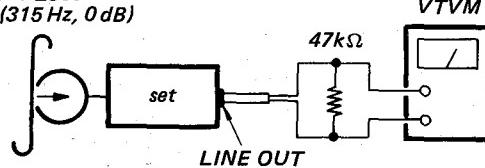
Speed checker	Digital frequency counter
±0.3%	2,990 ~ 3,010 Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25 Hz).

Adjustment Location:**Playback Level Adjustment****Procedure:**

Mode: playback

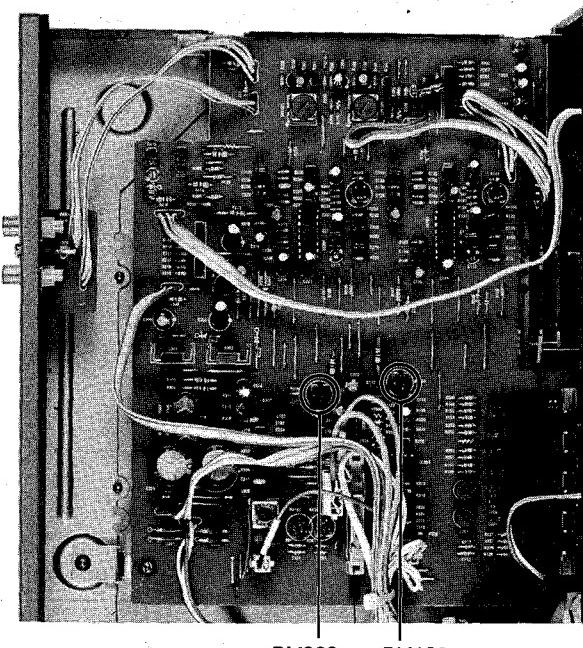
test tape
P-4-L300
(315 Hz, 0 dB)

**Specification:**

LINE OUT level: 0.45 ~ 0.50 V
(-4.9 ~ -3.9 dB)

Level difference between channels:
less than 0.5 dB

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

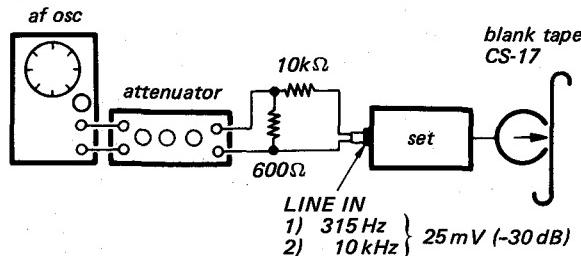
Record Bias Adjustment

Setting:

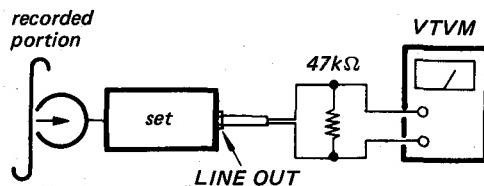
REC LEVEL control: standard record
(See page 8)

Procedure:

1. Mode: record



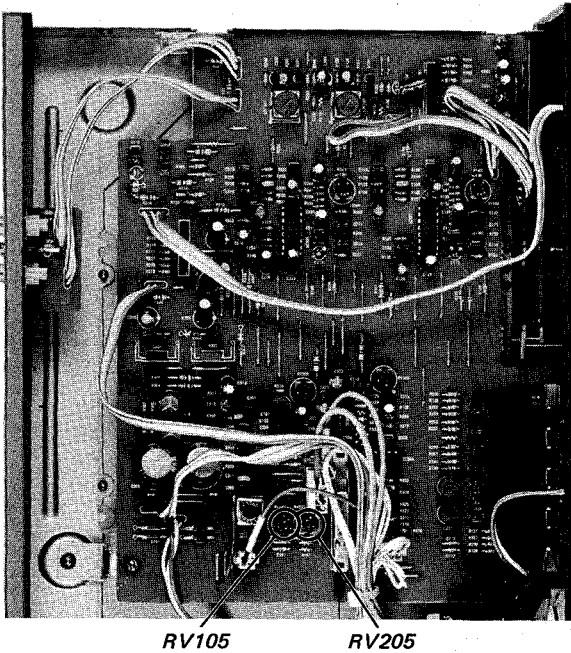
2. Mode: playback



Play back the tape recorded in step 1.

Confirm that the LINE OUT level of 10 kHz signal is 0 dB relative to that of 315 Hz. If not, adjust the RV105 (L-CH), RV205 (R-CH) and repeat steps 1 and 2.

Adjustment Location:



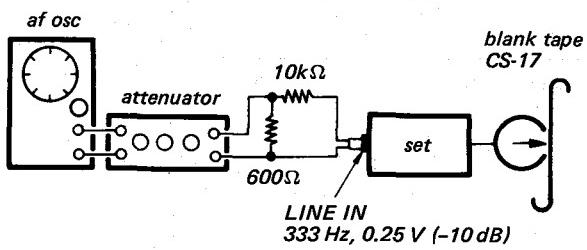
Record Level Adjustment

Setting:

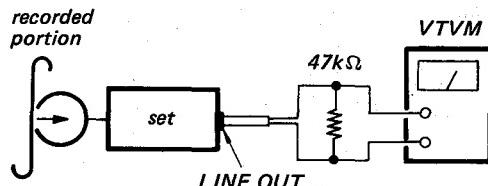
REC LEVEL control: standard record
(See page 8)

Procedure:

1. Mode: record



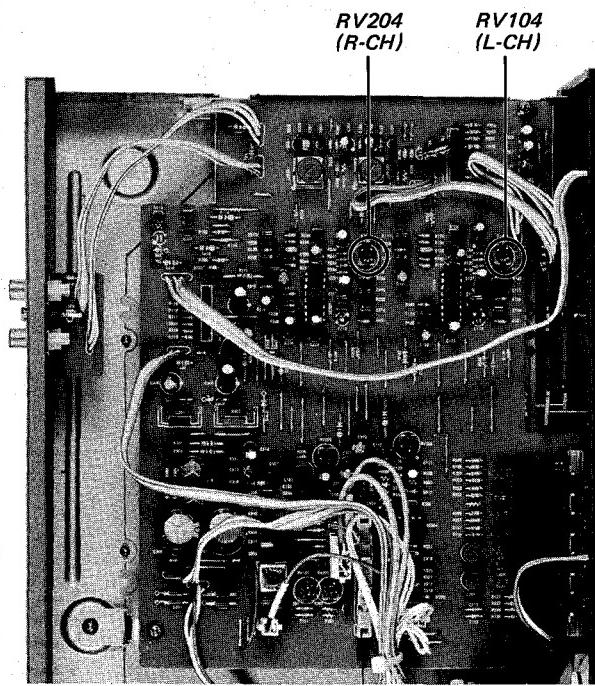
2. Mode: playback



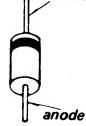
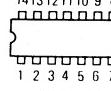
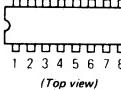
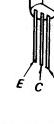
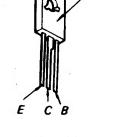
Specification:

LINE OUT level: 0.41 ~ 0.46 V
(-5.5 ~ -4.5 dB)

Adjustment Location:

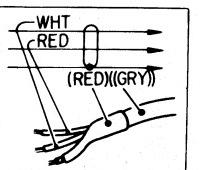


- Semiconductor Lead Layouts

NJM4562D-D	HZ7C1L RD5.1E-L1 10E-2
 (Top view)	
MB84011B	GL-9PR4
 (Top view)	
CX174-2 IR2E02	2SA733-P 2SC2001
 (Top view)	
M5218L	2SD809-K
	
1SS202-1	2SC2785-E
	

Note:

- Color code of sleeves over the end of the jacket.

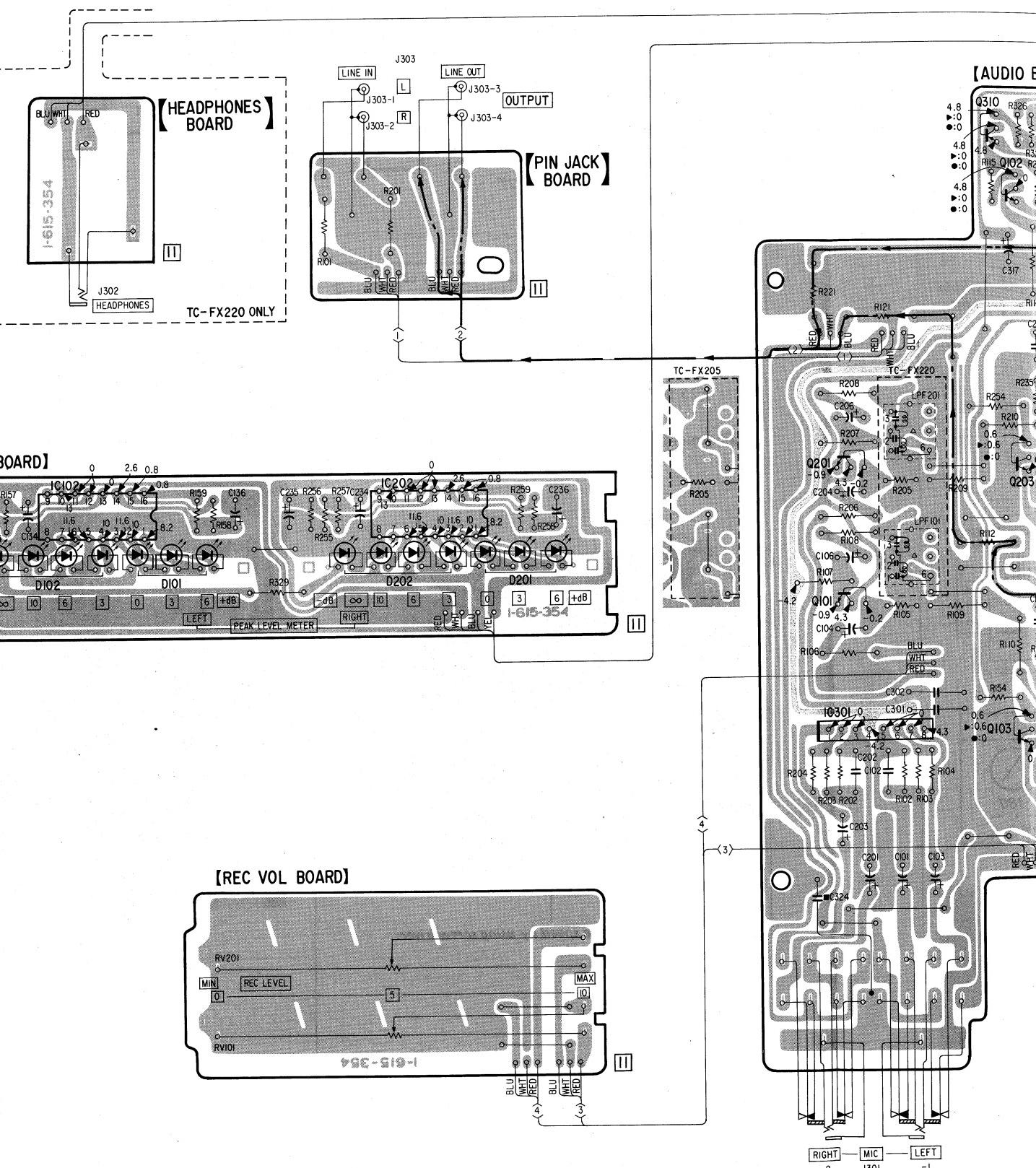


- — : parts extracted from the component side.
 - — : parts extracted from the conductor side.
 - — : indicates side identified with part number.
 - → : signal path
 - → : L-CH signal path
 - → : R-CH signal path
 - : B+ pattern
 - : B- pattern

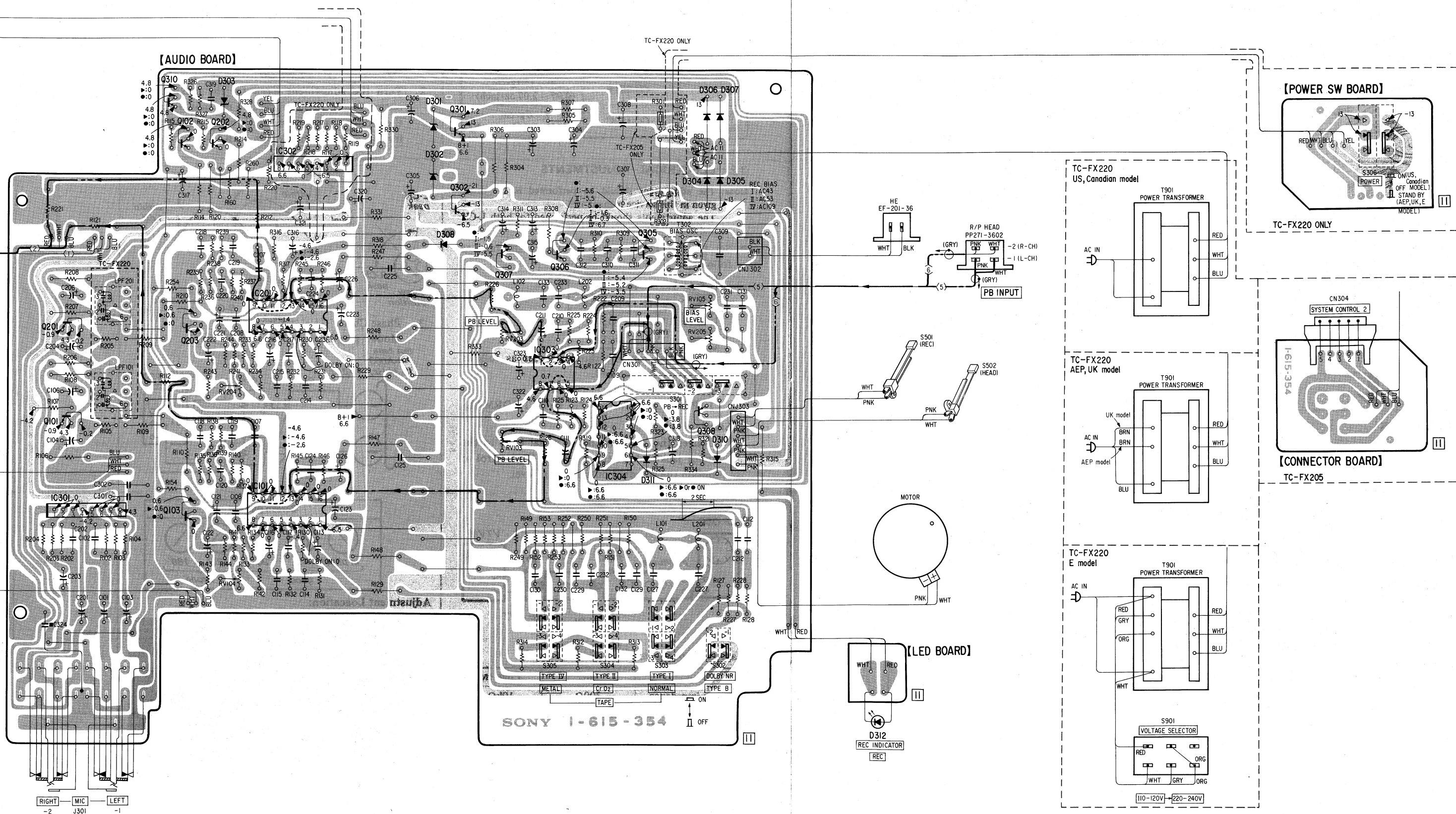
4-1. MOUNTING DIAGRAM

— Conductoide —

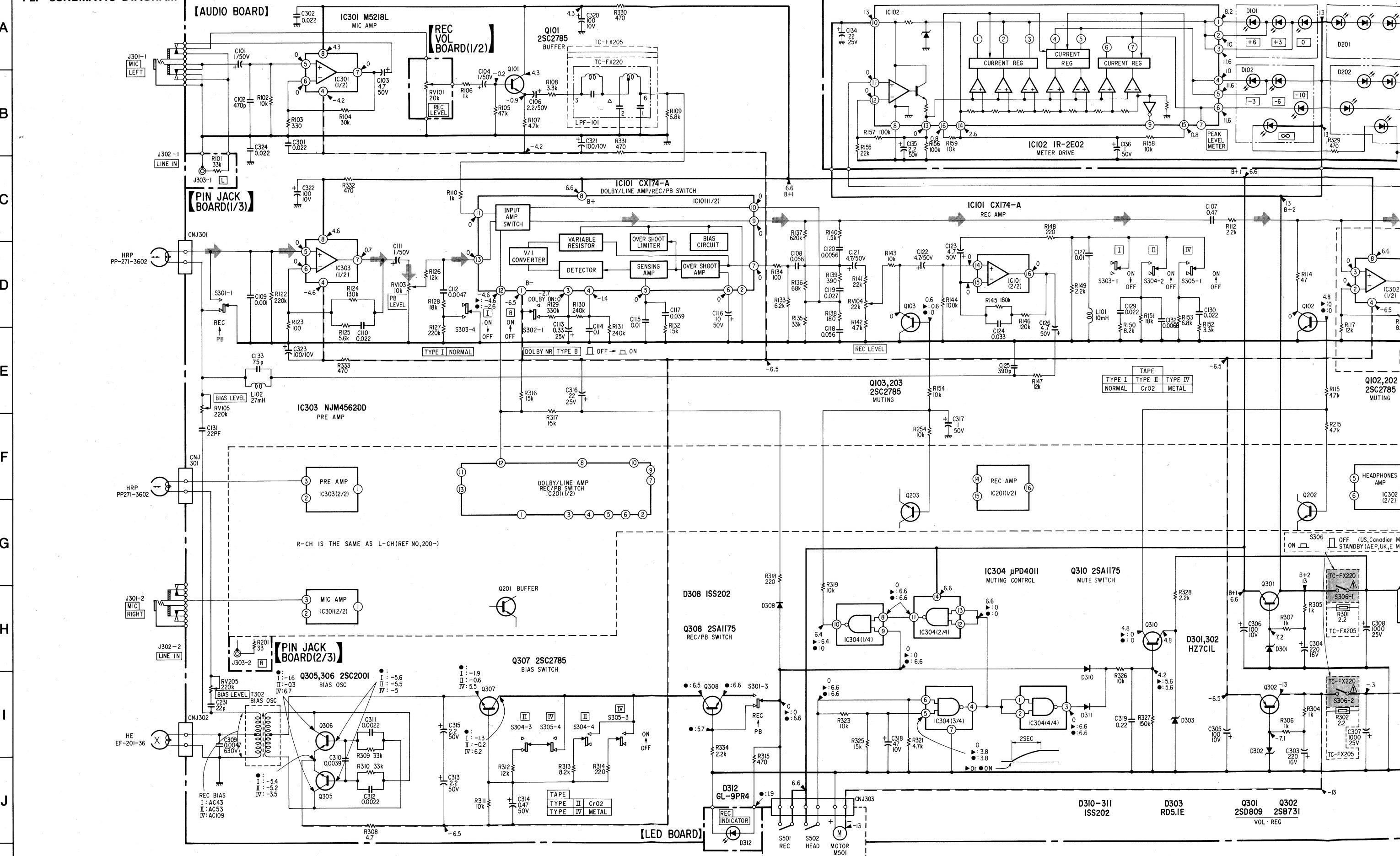
Q					201 101 IC301	310 102 203
C	IC102		IC202			
D	102	101		202	201	

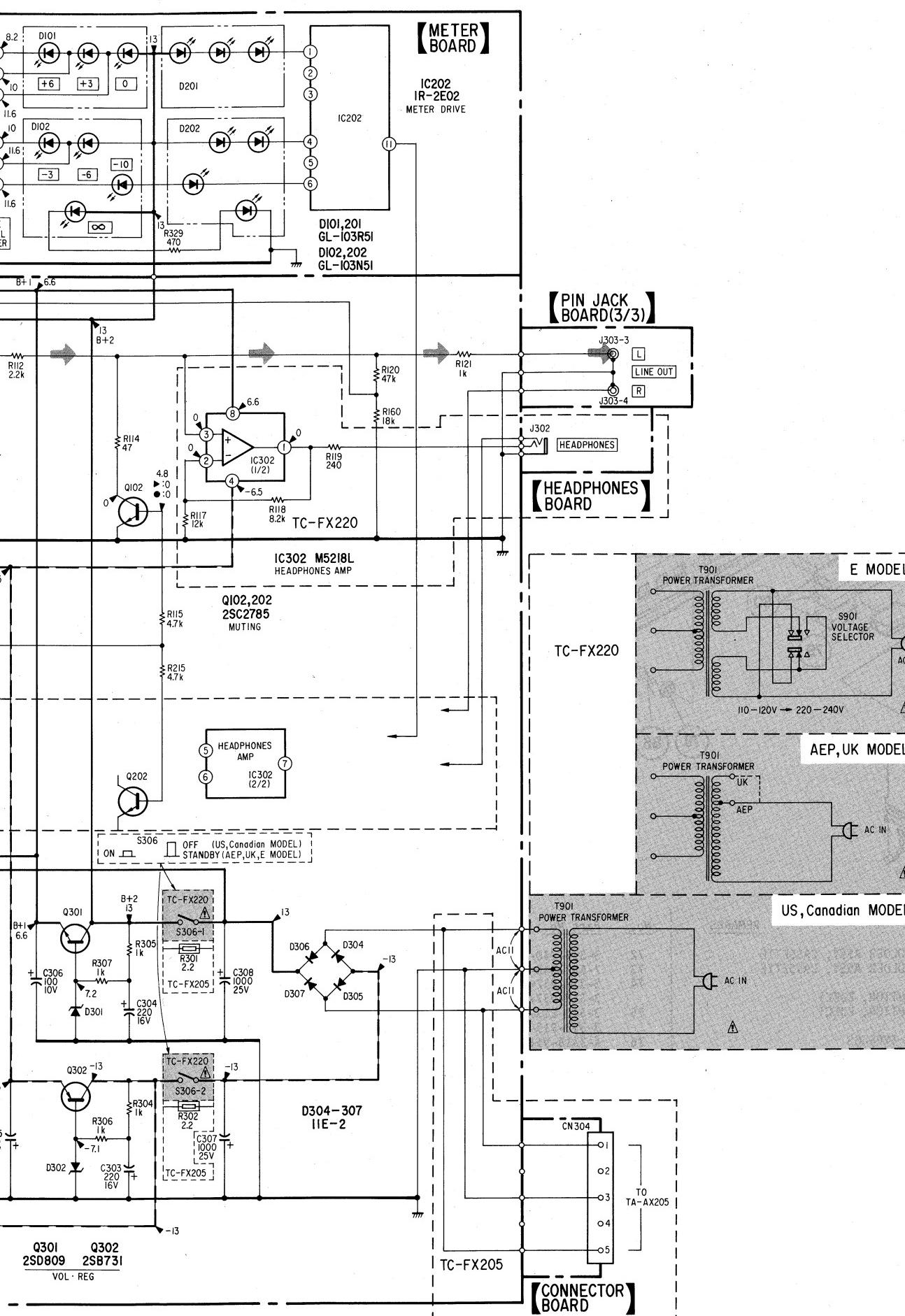


9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25



4-2. SCHEMATIC DIAGRAM





M

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$
50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
 -  : signal path.
 - Components for right channel have same values as for left channel. Reference numbers are coded from 200.
 - \triangle : internal component.
 - --- : B+ bus.
 - -- : B- bus.
 - \square : adjustment for repair.
 - AC voltage readings in the bias oscillator with a VTVM.
 - Voltages are dc with respect to ground unless otherwise noted.
 - Readings are taken under no-signal conditions with VOM (50 $k\Omega/\text{V}$).
 - no mark : STOP
 -  : PLAY
 -  : REC
 - Voltage variations may be noted due to normal production tolerances.
 - Switches:

Ref. No.	Switch	Position
S301	RECORD/PLAY BACK	PLAY BACK
S302	DOLBY NR	OFF
S303	TYPE I NORMAL	ON
S304	TYPE II CrO ₂	OFF
S305	TYPE IV METAL	OFF
S306	POWER	{ OFF STANDBY
S501	RECORD	OFF
S502	HEAD	OFF
S901	VOLTAGE SELECT	110-120V

Note: Voltages are measured with a VOM ($50\text{k}\Omega/\text{V}$).

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 5

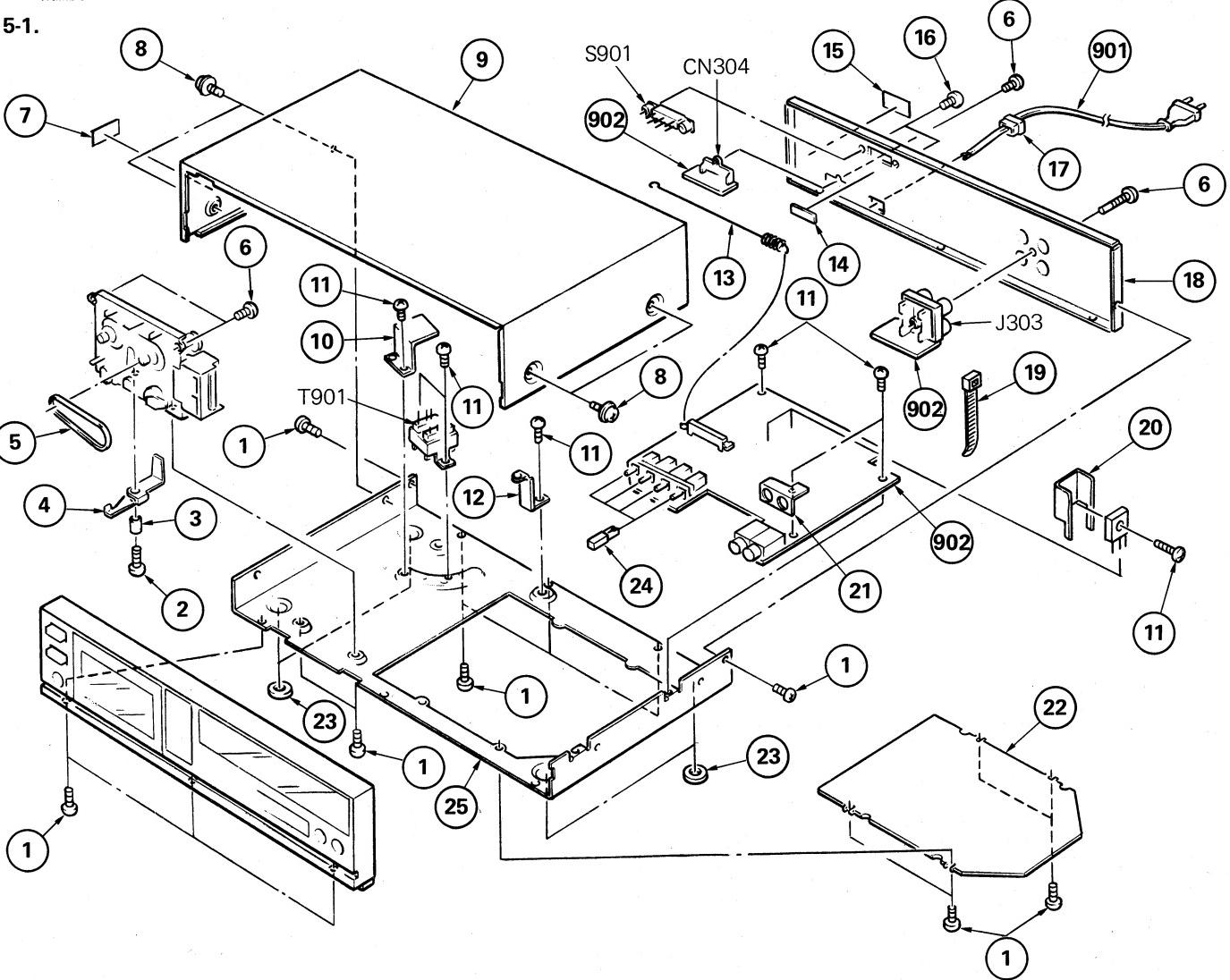
EXPLODED VIEWS AND PARTS LIST

NOTE:
The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a callout number on the remark column.

5-1.



No.	Part No.	Description	REMARKS
1	7-685-872-01	SCREW BVTT 3X8	
2	7-685-873-01	SCREW +BVTT 3X10 (S)	
3	*3-318-942-01	SPACER, REC LEVER	
4	*3-318-935-01	LEVER, REC	
5	3-530-181-XZ	BELT, DETCTING	
6	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S	
7	3-703-079-21	(TC-FX220:UK)...LABEL, CAUTION (BACK)	
8	4-889-321-01	(SILVER)...SCREW	
9	4-889-321-11	(BLACK)...SCREW	
10	4-904-474-21	(SILVER)...CASE	
11	4-904-474-31	(BLACK)...CASE	
12	*3-323-464-01	(TC-FX220)...INSULATOR	
13	7-685-871-01	SCREW +BVTT 3X6 (S)	
14	*3-318-936-01	BRACKET, PC BOARD	
15	3-318-949-01	SPRING, TENSION	
	*3-701-030-00	LABEL, SERIAL NUMBER	
	*3-318-929-01	(TC-FX220:AEP)...LABEL, MODEL NUMBER	
	*3-318-930-01	(TC-FX220:UK)...LABEL, MODEL NUMBER	
	*3-318-945-01	(TC-FX220:G-AEP)...LABEL, MODEL NUMBER	
	*4-302-759-00	(TC-FX205/220:US,Canadian,E)	
		...LABEL, SERIAL NUMBER	

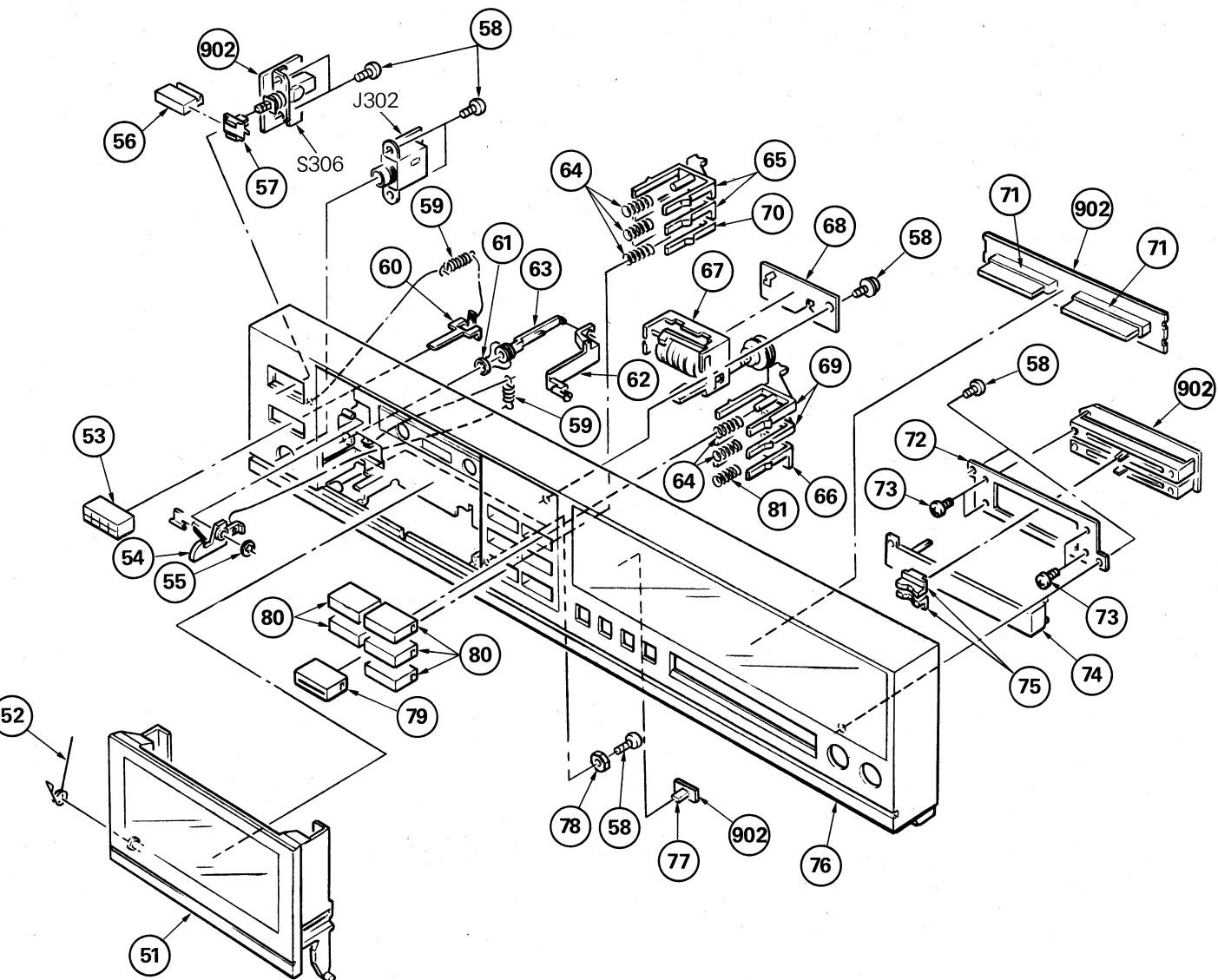
TC-FX205/FX220

TC-FX205/FX220

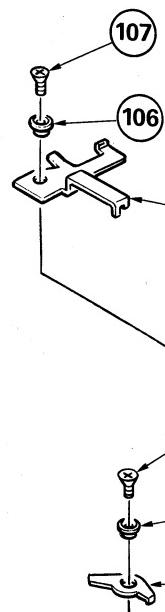
The components identified by shading and mark are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-2.

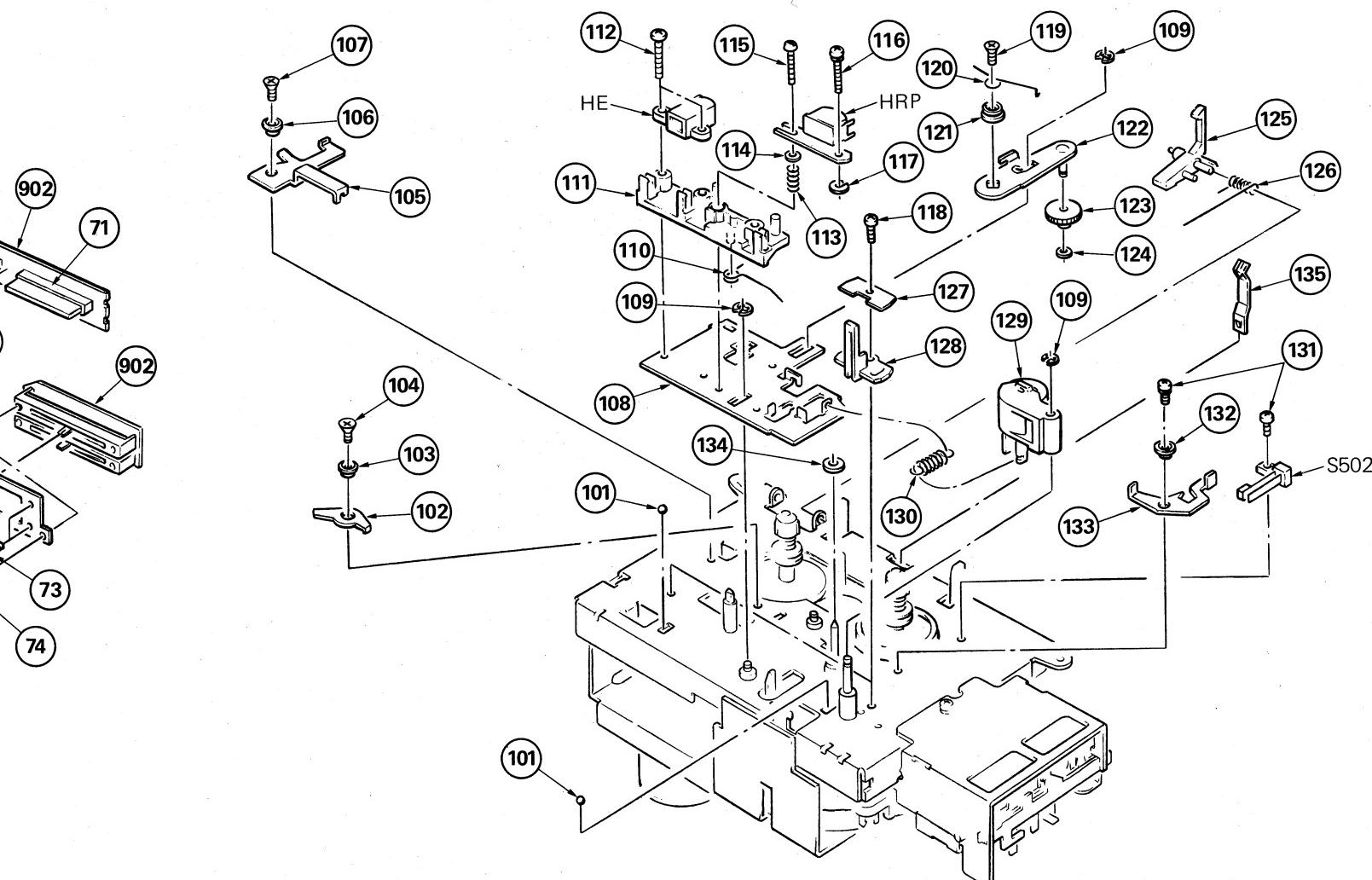


5-3.

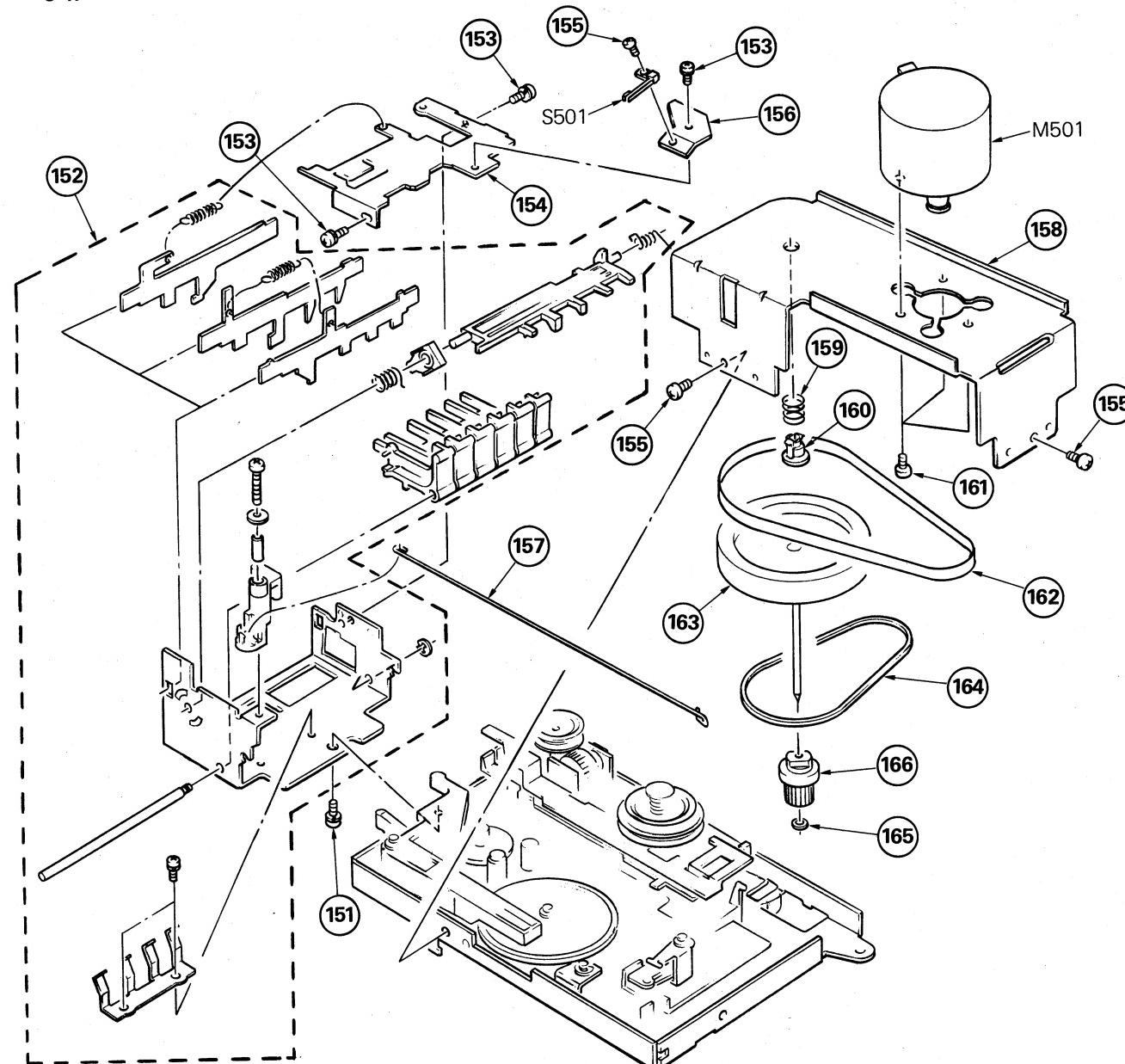


No.	Part No.	Description	REMARKS	No.	Part No.	Description	REMARKS	No.	Part No.	Description	REMARKS
51	X-3318-917-1	(SILVER)...HOLDER ASSY, CASSETTE		72	3-318-940-01	BRACKET, CONTROL		101	7-671-11		
	X-3318-918-1	(BLACK)...HOLDER ASSY, CASSETTE		73	7-682-545-09	SCREW +B 3X4		102	3-596-15		
52	3-318-954-01	SPRING		74	3-318-937-01	(SILVER)...PLATE, ORNAMENTAL, CONTROL		103	3-596-14		
53	3-304-419-00	(SILVER)...BUTTON, EJECT			3-318-937-11	(BLACK)...PLATE, ORNAMENTAL, CONTROL		104	3-596-16		
	3-304-419-31	(BLACK)...BUTTON, EJECT		75	3-313-213-21	(SILVER)...BUTTON, REC CONTROL		105	*3-596-16		
54	*3-318-953-01	LEVER, LOCK		76	3-313-213-31	(BLACK)...BUTTON, REC CONTROL		106	3-596-14		
55	7-624-190-11	STOP RING 3, TYPE-CS			X-3318-911-1	(SILVER)(TC-FX220:AEP,UK,E)		107	3-596-16		
56	3-318-911-01	(SILVER)(TC-FX220)...KNOB (POWER,L), T MOLD			X-3318-912-1	(BLACK)(TC-FX220:US,Canadian)		108	*3-596-16		
	3-318-911-11	(BLACK)(TC-FX220)...KNOB (POWER,L), T MOLD			X-3318-912-1	(BLACK)(TC-FX220:US,Canadian)		109	3-596-17		
57	*4-902-831-01	(TC-FX220)...JOINT (G), KNOB			X-3318-913-1	(SILVER)(TC-FX220:US,Canadian)		110	3-596-10		
58	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S			X-3318-914-1	(BLACK)(TC-FX220:AEP,UK,E)		111	3-596-12		
59	3-540-244-00	SPRING, TENSION			X-3318-915-1	(SILVER)(TC-FX205)...PANEL ASSY, FRONT		112	7-621-77		
60	*3-313-203-00	PLATE, SLIDE			X-3318-916-1	(BLACK)(TC-FX205)...PANEL ASSY, FRONT		113	3-596-11		
61	3-312-441-00	RING, PISTON			X-3318-915-1	(SILVER)(TC-FX205)...PANEL ASSY, FRONT		114	3-596-16		
62	3-318-952-01	LEVER, EJECT			X-3318-916-1	(BLACK)(TC-FX205)...PANEL ASSY, FRONT		115	3-596-15		
63	3-312-458-01	PISTON (A)			X-3318-915-1	(SILVER)(TC-FX205)...PANEL ASSY, FRONT		116	7-621-25		
64	3-570-064-02	SPRING, COMPRESSION			X-3318-916-1	(BLACK)(TC-FX205)...PANEL ASSY, FRONT		117	3-596-17		
65	*3-318-931-01	LEVER (A), BUTTON			X-3318-915-1	(SILVER)(TC-FX205)...PANEL ASSY, FRONT		118	3-596-16		
66	*3-318-933-01	LEVER (C), BUTTON			X-3318-916-1	(BLACK)(TC-FX205)...PANEL ASSY, FRONT					
67	1-548-589-21	COUNTER, TAPE (MIDDLE TYPE)									
68	*3-318-939-01	BRACKET, COUNTER									
69	*3-318-932-01	LEVER (B), BUTTON									
70	*3-318-934-01	LEVER (D), BUTTON									
71	3-318-941-01	SPACER, LED									
	902	*A-2056-267-A (TC-FX220)...PC BOARD ASSY, AUDIO									
		*A-2056-268-A (TC-FX205)...PC BOARD ASSY, AUDIO									

5-3.



5-4.



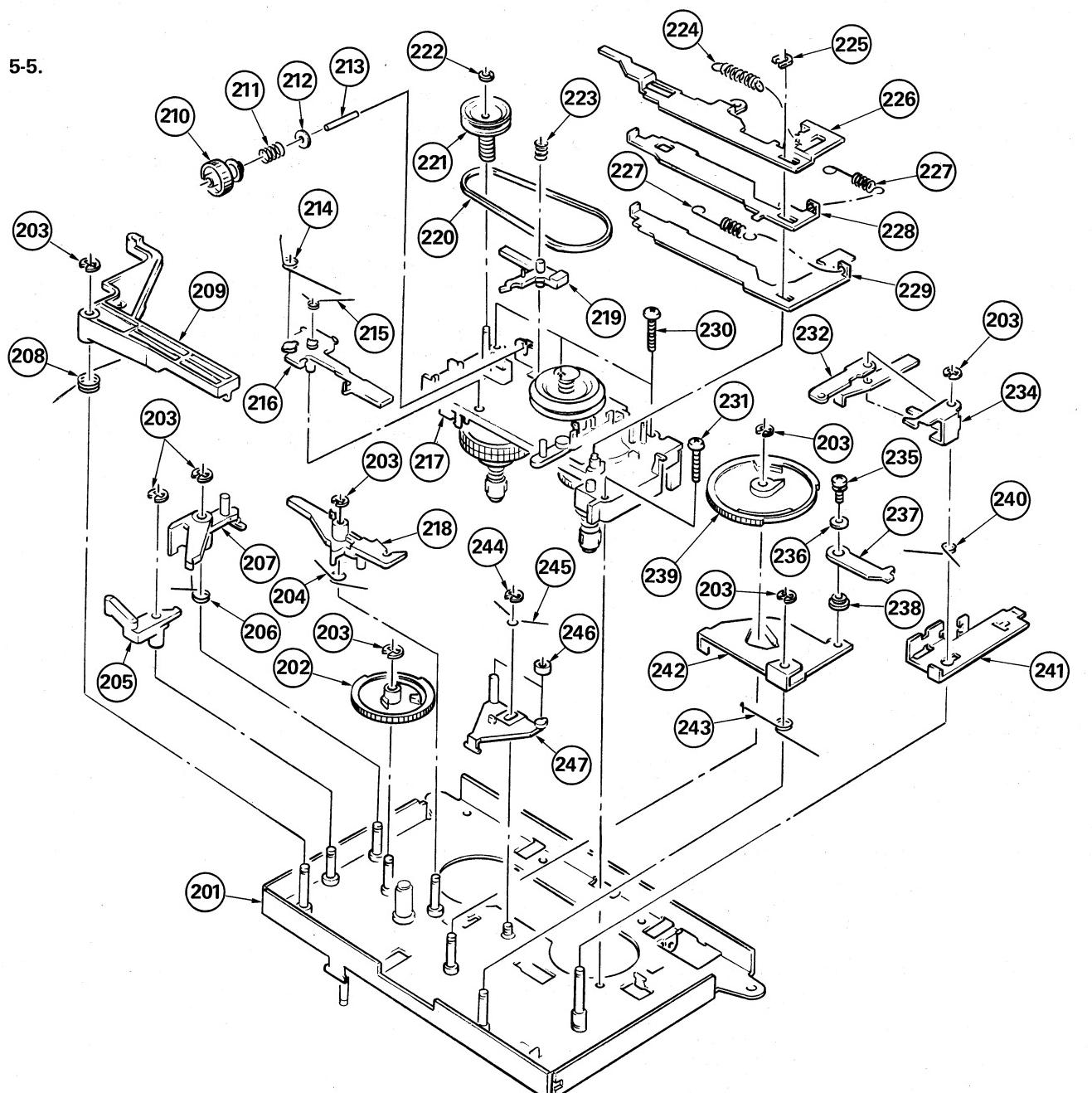
REMARKS

No.	Part No.	Description	REMARKS	No.	Part No.	Description	REMARKS
101	7-671-113-02	STEAL, BALL 3		119	7-627-452-38	SCREW, PRECISION +K 2X5	
102	3-596-158-01	SHIFT (8A), BRAKE		120	3-596-118-01	SPRING	
103	3-596-140-01	COLLAR (3B), RETURN, PANEL		121	3-596-145-01	COLLAR, TAKE-UP (8A)	
104	3-596-164-01	TAP TIGHT		122	*X-3596-106-1	TAKE-UP ASSY (8B)	
105	*3-596-162-01	LEVER		123	3-596-124-01	GEAR, TAKE-UP (8A)	
106	3-596-141-01	COLLAR, SAFETY (8A)		124	3-596-177-01	WASHER	
107	3-596-163-01	SCREW (2.6X5)		125	3-596-125-01	SENSOR (8A), REC	
108	*3-596-160-01	PANEL (8C-EGC), HEAD		126	3-596-119-01	SPRING	
109	3-596-172-01	RING, E		127	3-596-147-01	RETAINER (9D), PANEL	
110	3-596-102-01	SPRING		128	3-596-121-01	GUIDE (9A), CASSETTE	
111	3-596-123-01	BASE (8A), HEAD		129	X-3596-101-1	PINCH ROLLER ASSY (8A)	
112	7-621-772-70	SCREW +B 2X14		130	3-596-103-01	SPRING	
113	3-596-117-01	SPRING		131	7-621-773-86	SCREW +P 2.6X4	
114	3-596-169-01	FW (2.2X6.0X0.4)		132	3-596-178-01	COLLAR	
115	3-596-165-01	BIND, +-		133	*3-596-179-01	ARM	
116	7-621-255-85	SCREW +P 2X14		134	3-596-146-01	NLW (2.4X6.0X0.50)	
117	3-596-173-01	WASHER (0.10), HEAD		135	3-596-151-01	PLATE (8A), SP, PACK RETAINER	
118	3-596-167-01	SCREW (2.6X6.5)					

AUDIO
AUDIO

SECTION 6 ELECTRICAL PARTS LIST

5-5.



No.	Part No.	Description	REMARKS	No.	Part No.	Description	REMARKS
201	*X-3596-107-1	RIVETING ASSY (8BA), CHASSIS		224	3-596-112-01	SPRING	
202	3-596-136-01	GEAR, RF DRIVE (8B)		225	7-624-193-09	STOP RING (2.5) GRIP	
203	3-596-172-01	RING, E		226	*3-596-153-01	LEVER, AUTO (8A)	
204	3-596-105-01	SPRING		227	3-596-111-01	SPRING	
205	3-596-128-01	LEVER, PAUSE TRIGGER (8A)		228	*3-596-156-01	LEVER, REW (8B)	
206	3-596-106-01	SPRING		229	*3-596-155-01	LEVER, FF (8B)	
207	3-596-129-01	LEVER, RF TRIGGER (8A)		230	3-596-168-01	BIND	
208	3-596-107-01	SPRING		231	7-621-259-65	SCREW +P 2.6X10	
209	3-596-130-01	LEVER, RF TRIGGER (8A)		232	*3-596-149-01	ARM, RP SWITCH (8A)	
210	X-3596-102-1	WORM ASSY (8RA), AUTO, GEAR		234	*3-596-150-01	ARM, RP SHIFT (8A)	
211	3-596-115-01	SPRING		235	7-621-770-67	SCREW +P 2.6X6	
212	3-596-176-01	PSW (2.0X8.0X0.25)		236	3-596-170-01	FW (2.8X7.5X0.5)	
213	3-596-144-01	SHAFT		237	*3-596-154-01	LEVER, RP SELECT (8B)	
214	3-596-110-01	SPRING		238	3-596-143-01	COLLAR, RP SELECT (8A)	
215	3-596-109-01	SPRING		239	3-596-137-01	GEAR, DRIVE (8B)	
216	3-596-132-01	ARM, CANCEL (8A)		240	3-596-108-01	SPRING	
217	X-3596-103-1	BASE ASSY (8D), REEL TABLE		241	*3-596-148-01	LEVER, REC (8A)	
218	3-596-127-01	LEVER, RETURN (8A)		242	*3-596-157-01	ARM, PLAY (8-EGC)	
219	3-596-131-01	ARM, AUTO (8A)		243	3-596-116-01	SPRING	
220	3-596-120-01	BELT, SQUARE		244	7-624-104-04	STOP RING 2.0, TYPE -E	
221	3-596-138-01	GEAR, RELAY PULLEY (8RA)		245	3-596-104-01	SPRING	
222	3-701-436-11	WASHER, 1.6		246	3-596-135-01	RUBBER, BRAKE	
223	3-596-114-01	SPRING		247	3-596-126-01	ARM, BRAKE (8A)	

NOTE:

Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μ F, PF: $\mu\mu$ F.

RESISTORS:
All resistors are in ohms.
F : nonflammable

COILS:
MMH : mH, UH : μ H

SEMICONDUCTORS

In each case, U : μ , for example:
UA... : μ A..., UPA... : μ PA..., UPC... : μ PC,
UPD... : μ PD...

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	*A.1-534-817-XX (TC-FX220:AEP)	CORD, POWER
	*A.1-551-472-00 (TC-FX220:E)	CORD, POWER
	*A.1-551-628-00 (TC-FX220:US,Canadian)	CORD, POWER
	*A.1-556-562-11 (TC-FX220:UK)	CORD, POWER

Ref.No.	Part No.	Description
902	*A-2056-267-A (TC-FX220)	PC BOARD ASSY, AUDIO
902	*A-2056-268-A (TC-FX205)	PC BOARD ASSY, AUDIO

C101	1-123-380-00	ELECT	1MF	20%	50V
C102	1-162-106-00	CERAMIC	470PF	10%	50V
C103	1-123-369-00	ELECT	4.7MF	20%	50V

C104	1-123-380-00	ELECT	1MF	20%	50V
C106	1-123-381-00	ELECT	2.2MF	20%	50V
C107	1-124-270-11	ELECT	0.47MF	20%	50V

C108	1-136-162-00	FILM	0.056MF	5%	50V
C109	1-162-110-00	CERAMIC	0.001MF	10%	50V
C110	1-136-157-00	FILM	0.022MF	5%	50V

C111	1-123-380-00	ELECT	1MF	20%	50V
C112	1-162-112-00	CERAMIC	0.0047MF	30%	25V
C113	1-131-344-00	ELECT(SOLID)	0.33MF	20%	25V

C114	1-136-165-00	FILM	0.1MF	5%	50V
C115	1-136-153-00	FILM	0.01MF	5%	50V
C116	1-123-356-00	ELECT	10MF	20%	50V

C117	1-136-160-00	FILM	0.039MF	5%	50V
C118	1-136-162-00	FILM	0.056MF	5%	50V
C119	1-136-158-00	FILM	0.027MF	5%	50V

C120	1-130-480-00	MYLAR	0.0056MF	5%	50V
C121	1-123-369-00	ELECT	4.7MF	20%	50V
C122	1-123-369-00	ELECT	4.7MF	20%	50V

C123	1-123-369-00	ELECT	4.7MF	20%	50V
C124	1-136-159-00	FILM	0.033MF	5%	50V
C125	1-162-105-00	CERAMIC	390PF	10%	50V

C126	1-123-369-00	ELECT	4.7MF	20%	50V
C127	1-136-153-00	FILM	0.01MF	5%	50V
C129	1-136-157-00	FILM	0.022MF	5%	50V

C130	1-136-159-00	FILM	0.033MF	5%	50V
C131	1-107-210-00	MICA	22PF	10%	500V
C132	1-130-481-00	MYLAR	0.0068MF	5%	50V

C133	1-107-167-00	MICA	75PF	5%	500V
C134	1-123-330-00	ELECT	22MF	20%	25V
C135	1-123-381-00	ELECT	2.2MF	20%	50V

C136	1-123-380-00	ELECT	1MF	20%	50V
C301	1-161-494-00	CERAMIC	0.022MF	30%	25V
C302	1-161-494-00	CERAMIC	0.022MF	30%	25V

C303	1-123-321-00	ELECT	220MF	20%	16V
C304	1-123-321-00	ELECT	220MF	20%	16V
C305	1-123-307-00	ELECT	100MF	20%	10V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
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C306	1-123-307-00	ELECT	100MF	20%	10V
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C307	1-123-337-00	ELECT	1000MF	20%	25V
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C308	1-123-337-00	ELECT	1000MF	20%	25V
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C309	1-129-710-00	FILM	0.0047MF	10%	630V
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C310	1-130-478-00	MYLAR	0.0039MF	5%	50V
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C311	1-130-475-00	MYLAR	0.0022MF	5%	50V
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C312	1-130-475-00	MYLAR	0.0022MF	5%	50V
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C313	1-123-381-00	ELECT	2.2MF	20%	50V
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C314	1-123-379-00	ELECT	0.47MF	20%	50V
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C315	1-123-381-00	ELECT	2.2MF	20%	50V
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C316	1-123-330-00	ELECT	22MF
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ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC303	8-759-705-62	IC NJM4562D-D
IC304	8-759-984-11	IC MB84011B
J301	1-507-797-21	JACK, LARGE TYPE (MIC)
J302	1-507-982-11	(TC-FX205)...JACK (LARGE TYPE) (HEADPHONES)
J303	1-507-908-11	JACK, PIN 4P (LINE IN/LINE OUT)
L101	1-408-924-00	MICRO INDUCTOR 10MMH
L102	1-408-929-00	MICRO INDUCTOR 27MMH
L201	1-408-924-00	MICRO INDUCTOR 10MMH
L202	1-408-929-00	MICRO INDUCTOR 27MMH
LPF101	1-231-388-00	FILTER, LOW PASS
LPF201	1-231-388-00	FILTER, LOW PASS
M501	X-3596-108-1	MOTOR ASSY
Q101	8-729-178-55	TRANSISTOR 2SC2785-E
Q102	8-729-178-55	TRANSISTOR 2SC2785-E
Q103	8-729-178-55	TRANSISTOR 2SC2785-E
Q201	8-729-178-55	TRANSISTOR 2SC2785-E
Q202	8-729-178-55	TRANSISTOR 2SC2785-E
Q203	8-729-178-55	TRANSISTOR 2SC2785-E
Q301	8-729-180-92	TRANSISTOR 2SD809-K
Q302	8-729-173-13	TRANSISTOR 2SB731
Q305	8-729-100-13	TRANSISTOR 2SC2001
Q306	8-729-100-13	TRANSISTOR 2SC2001
Q307	8-729-178-55	TRANSISTOR 2SC2785-E
Q308	8-729-173-37	TRANSISTOR 2SA733-P
Q310	8-729-173-37	TRANSISTOR 2SA733-P
R101	1-247-167-00	CARBON 33K 5% 1/4W
R102	1-247-855-00	CARBON 10K 5% 1/6W
R103	1-247-819-00	CARBON 330 5% 1/6W
R104	1-247-866-00	CARBON 30K 5% 1/6W
R105	1-247-871-00	CARBON 47K 5% 1/6W
R106	1-247-131-00	CARBON 1K 5% 1/4W
R107	1-247-147-00	CARBON 4.7K 5% 1/4W
R108	1-247-143-00	CARBON 3.3K 5% 1/4W
R109	1-247-151-00	CARBON 6.8K 5% 1/4W
R110	1-247-131-00	CARBON 1K 5% 1/4W
R112	1-247-139-00	CARBON 2.2K 5% 1/4W
R114	1-247-099-00	CARBON 47 5% 1/4W
R115	1-247-847-00	CARBON 4.7K 5% 1/6W
R117	1-247-857-00	(TC-FX220)...CARBON 12K 5% 1/6W
R118	1-247-853-00	(TC-FX220)...CARBON 8.2K 5% 1/6W
R119	1-247-816-00	(TC-FX220)...CARBON 240 5% 1/6W
R120	1-247-871-00	CARBON 47K 5% 1/6W
R121	1-247-131-00	CARBON 1K 5% 1/4W
R122	1-247-887-00	CARBON 220K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R123	1-247-807-00	CARBON 100 5% 1/6W
R124	1-247-882-00	CARBON 130K 5% 1/6W
R125	1-247-849-00	CARBON 5.6K 5% 1/6W
R126	1-247-857-00	CARBON 12K 5% 1/6W
R127	1-247-887-00	CARBON 220K 5% 1/6W
R128	1-247-861-00	CARBON 18K 5% 1/6W
R129	1-246-533-00	CARBON 330K 5% 1/4W
R130	1-247-888-00	CARBON 240K 5% 1/6W
R131	1-247-888-00	CARBON 240K 5% 1/6W
R132	1-247-859-00	CARBON 15K 5% 1/6W
R133	1-247-850-00	CARBON 6.2K 5% 1/6W
R134	1-247-807-00	CARBON 100 5% 1/6W
R135	1-247-867-00	CARBON 33K 5% 1/6W
R136	1-247-875-00	CARBON 68K 5% 1/6W
R137	1-247-898-00	CARBON 620K 5% 1/6W
R138	1-247-813-00	CARBON 180 5% 1/6W
R139	1-247-821-00	CARBON 390 5% 1/6W
R140	1-247-835-00	CARBON 1.5K 5% 1/6W
R141	1-247-863-00	CARBON 22K 5% 1/6W
R142	1-247-847-00	CARBON 4.7K 5% 1/6W
R143	1-247-855-00	CARBON 10K 5% 1/6W
R144	1-247-879-00	CARBON 100K 5% 1/6W
R145	1-247-885-00	CARBON 180K 5% 1/6W
R146	1-247-881-00	CARBON 120K 5% 1/6W
R147	1-247-157-00	CARBON 12K 5% 1/4W
R148	1-247-115-00	CARBON 220 5% 1/4W
R149	1-247-839-00	CARBON 2.2K 5% 1/6W
R150	1-247-853-00	CARBON 8.2K 5% 1/6W
R151	1-247-861-00	CARBON 18K 5% 1/6W
R152	1-247-843-00	CARBON 3.3K 5% 1/6W
R153	1-247-851-00	CARBON 6.8K 5% 1/6W
R154	1-247-855-00	CARBON 10K 5% 1/6W
R155	1-247-863-00	CARBON 22K 5% 1/6W
R156	1-247-879-00	CARBON 100K 5% 1/6W
R157	1-247-879-00	CARBON 100K 5% 1/6W
R158	1-247-855-00	CARBON 10K 5% 1/6W
R159	1-247-855-00	CARBON 10K 5% 1/6W
R160	1-247-861-00	CARBON 18K 5% 1/6W
R301	1-806-968-11	(TC-FX205)...THERMISTOR (POSITIVE)
R302	1-806-968-11	(TC-FX205)...THERMISTOR (POSITIVE)
R304	1-247-131-00	CARBON 1K 5% 1/4W
R305	1-247-131-00	CARBON 1K 5% 1/4W
R306	1-247-131-00	CARBON 1K 5% 1/4W
R307	1-247-131-00	CARBON 1K 5% 1/4W
R308	1-247-079-00	CARBON 4.7 5% 1/4W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R309	1-247-867-00	CARBON 33K 5% 1/6W
R310	1-247-867-00	CARBON 33K 5% 1/6W
R311	1-247-855-00	CARBON 10K 5% 1/6W
R312	1-247-857-00	CARBON 12K 5% 1/6W
R313	1-247-853-00	CARBON 8.2K 5% 1/6W
R314	1-247-815-00	CARBON 220 5% 1/6W
R315	1-247-123-00	CARBON 470 5% 1/4W
R316	1-247-859-00	CARBON 15K 5% 1/6W
R317	1-247-859-00	CARBON 15K 5% 1/6W
R318	1-247-115-00	CARBON 220 5% 1/4W
R319	1-247-855-00	CARBON 10K 5% 1/6W
R321	1-247-847-00	CARBON 4.7K 5% 1/6W
R323	1-247-855-00	CARBON 10K 5% 1/6W
R325	1-247-859-00	CARBON 15K 5% 1/6W
R326	1-247-855-00	CARBON 10K 5% 1/6W
R327	1-247-883-00	CARBON 150K 5% 1/6W
R328	1-247-139-00	CARBON 2.2K 5% 1/4W
R329	1-247-123-00	CARBON 470 5% 1/4W
R330	1-247-123-00	CARBON 470 5% 1/4W
R331	1-247-123-00	CARBON 470 5% 1/4W
R332	1-247-123-00	CARBON 470 5% 1/4W
R333	1-247-123-00	CARBON 470 5% 1/4W
R334	1-247-139-00	CARBON 2.2K 5% 1/4W
RV101	1-230-716-11	RES, VAR, SLIDE 20K (REC LEVEL)
RV103	1-228-994-00	RES, ADJ, CARBON 10K (PB LEVEL Adj.)
RV104	1-228-995-00	RES, ADJ, CARBON 22K (REC LEVEL Adj.)
RV105	1-228-998-00	RES, ADJ, CARBON 220K (REC BIAS Adj.)
RV201	1-230-716-11	RES, VAR, SLIDE 20K (REC LEVEL)
RV203	1-228-994-00	RES, ADJ, CARBON 10K (PB LEVEL Adj.)
RV204	1-228-995-00	RES, ADJ, CARBON 22K (REC LEVEL Adj.)
RV205	1-228-998-00	RES, ADJ, CARBON 220K (REC BIAS Adj.)
S301	1-554-033-00	SWITCH, SLISE (RECORD/PLAY BACK)
S302	1-570-154-11	SWITCH, PUSH (4 KEY)(DOLBY NR)
S303	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 1)
S304	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 2)
S305	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 4)
S306	1-570-103-11	(TC-FX220)...SWITCH, PUSH(1 KEY)(POWER)
S501	1-570-286-11	SWITCH, LEAF (RECORD)
S502	1-570-286-11	SWITCH, LEAF (HEAD)
S901	1-570-046-21	(TC-FX220:E)...SWITCH, VOLTAGE CHANGE
T302	1-433-296-11	TRANSFORMER, BIAS OSCILLATION
T901	1-448-093-11	(TC-FX220:US,Canadian)
T901	1-448-094-11	...TRANSFORMER, POWER
T901	1-448-095-11	(TC-FX220:E).....TRANSFORMER, POWER

ACCESSORY & PACKING MATERIAL

Part.No.	Description
1-551-734-11	(TC-FX220)...CORD, CONNECTION (RK-74A)
3-318-957-01	(TC-FX220)...INDIVIDUAL CARTON
3-318-958-01	(TC-FX220)...CUSHION (LEFT), LOWER
3-318-959-01	(TC-FX220)...C